

MINCO

Engineering Instruction
No. 103

USER INSTRUCTIONS FOR TYPE 3 AND 4 SHRINK BANDS

Shrink bands are heat shrinkable film strips with adhesive on the ends, designed to install Thermofoil™ heaters and heater-sensors around cylinders. Type 3 polyester bands are usable from -73 to 150°C (-100 to 300°F); type 4 polyimide bands from -73 to 177°C (-100 to 350°F). Both meet outgassing requirements for space use.

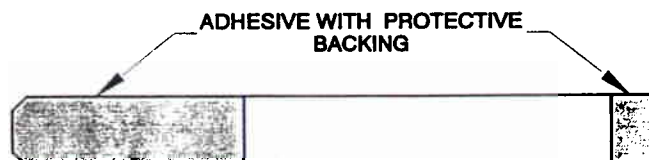


Figure 1: Band Before Assembly

1. Carefully remove the protective backing over the smaller adhesive area of the band. See Figure 1. Avoid contaminating the exposed adhesive during handling, i.e. dirt, fingerprints, etc.
2. Position the Thermofoil™ heater on the cylinder and secure the short adhesive end of the band over the heater. See Figure 2.
3. Carefully remove the protective backing from the longer adhesive area of the band. Wrap the band tightly around the heater and cylinder, overlapping the long adhesive end as necessary. See Figure 3. Firmly press adhesive areas of the band to insure proper bonding.

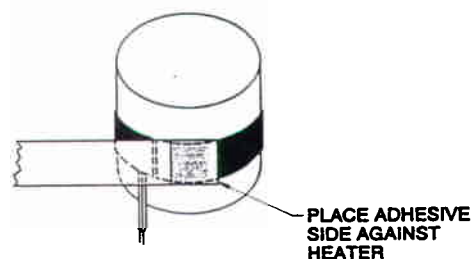


Figure 2

DR:	<i>M.S. 2-3-94</i>
CHK:	<i>BFT 2-7-94</i>
ENG:	<i>JS 2/07/94</i>
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4. Using an oven or heat gun, shrink the band onto the assembly. If using an oven, heat the entire assembly at a temperature between 93°C to 107°C (200°F to 225°F) for 15 minutes to shrink the band tightly around the heater. Be sure the oven has adequate temperature control and will not exceed 107°C (225°F). If you use a heat gun, move the tip around as you heat to uniformly shrink the band and prevent hot spots. Use caution; overheating with the heat gun will damage the shrink band.

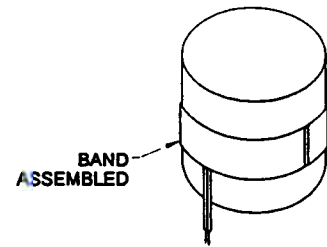


Figure 3

5. Expected shrinkage for a Type 3 band is approximately 3-5% and for a Type 4 band is approximately 2-3%. Shrinking the band will expose some adhesive on the terminal end. The strip of exposed adhesive may be removed by rubbing gently with a soft common lead eraser. Any remaining particles may be removed by wiping with a cloth or tissue paper dampened lightly with acetone. If the exposed adhesive is objectionable, contact Minco to design an extension tab for application of an epoxy.

Shelf life: Use Type 3 bands within 12 months of manufacturing date code and Type 4 bands within 4 months; usability after this should be determined by sample testing. Test criteria for Type 4 bands are to be per Minco E.I. 401; copy sent on request.

Storage Conditions: Store at or below room temperature. Bands can withstand up to 38°C (100°F) for short periods of time without shrinking.

Use In a Vacuum: Even heatsinks with a mirror finish have microscopic surface pits. In normal atmospheres these pits are filled with air molecules which provide adequate heat transfer from the heater to heat sink. Use of a bondline adhesive or heatsink compound between the heater and the heat sink is recommended for vacuum applications. Or, derate the power accordingly.

We believe this information to be reliable, but the customer must assume responsibility for heater performance in the intended application. MINCO accepts no liability beyond our standard warranty for consequences of improper installation and/or heater or adhesive failure.

Please contact your local MINCO sales representative or the factory for assistance if any questions or problems occur.